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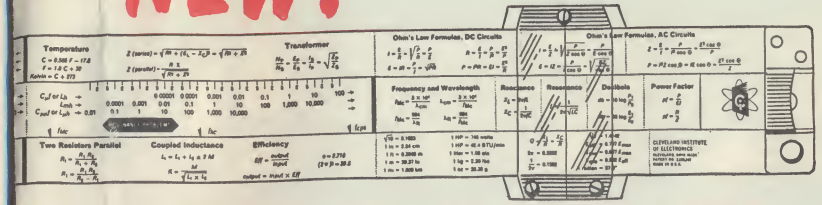

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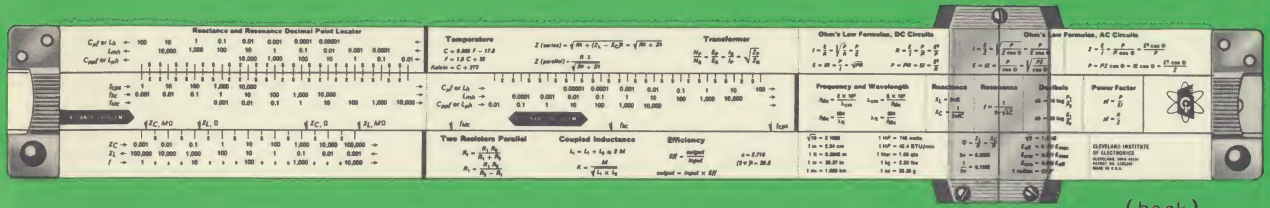

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291

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10 DAY TRIAL

☐ Please send me a CIE Electronics Slide Rule with Instruction Course and top-grain leather carrying case. I am enclosing $19.95. If I am not satisfied, my money will be refunded. (Use the enclosed envelope).

Cleveland Institute of Electronics

Save $5.00 ... Order now! After Aug. 31, price is $24.95

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Electronics Slide Rule with Instruction Course

4

AUTO-PROGRAMMED Lessons

New...Electronics Slide Rule

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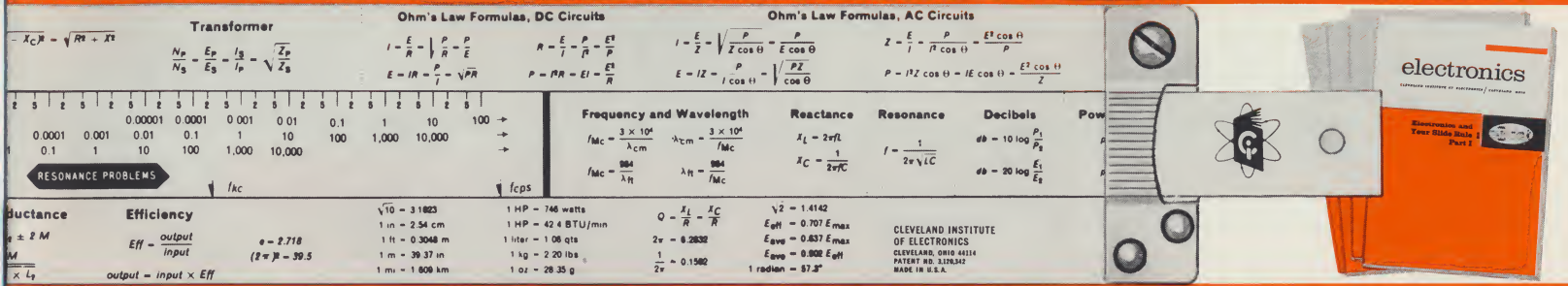


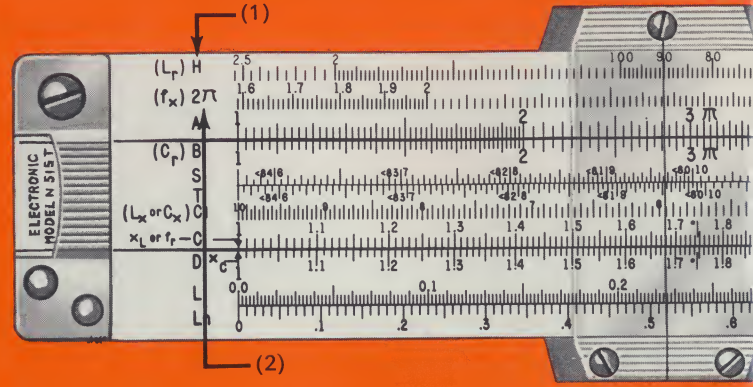
Solve Electronics Problems in Seconds!

"Cleveland Institute of Electronics has designed this Electronics Slide Rule to meet the specific needs of men who work or have an interest in electronics or electricity. It's a professional, high-quality instrument that will save you hours of valuable time in all types of computation. To help you become a real "pro" with this amazing rule, it comes complete with an Instruction Course of four AUTO-PROGRAMMED* Lessons. Men who have used it tell us this course alone is worth far more than the cost of *both* the slide rule *and* instruction course. We hope this booklet will answer all your questions about the CIE Slide Rule. It's a useful, practical tool and I know it will help you solve electronics problems quickly and accurately."

*TRADEMARK

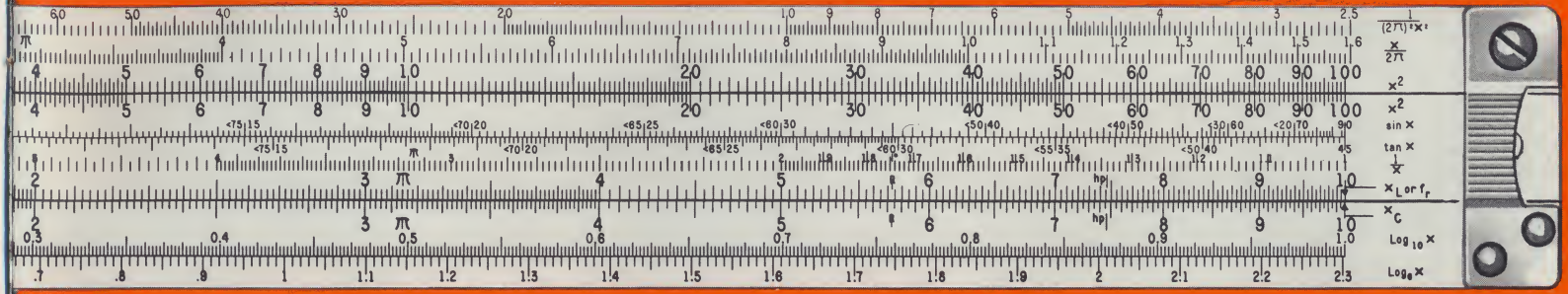
Carl E. Smith
Founder
and Electronics Consultant

Look! A high quality



Once you hold a CIE Electronics Slide Rule in your hands you'll know why technicians, students, hobbyists and engineers call it the "most useful tool" they've ever seen! This is no toy, no gadget. It's all-metal, a full 10" long and made to CIE's rigid specifications by Pickett, Inc. All components (body, slide and indicator) are precisely fitted to assure permanent accuracy and smooth, easy move-

instrument...“made to order” for men in electronics!

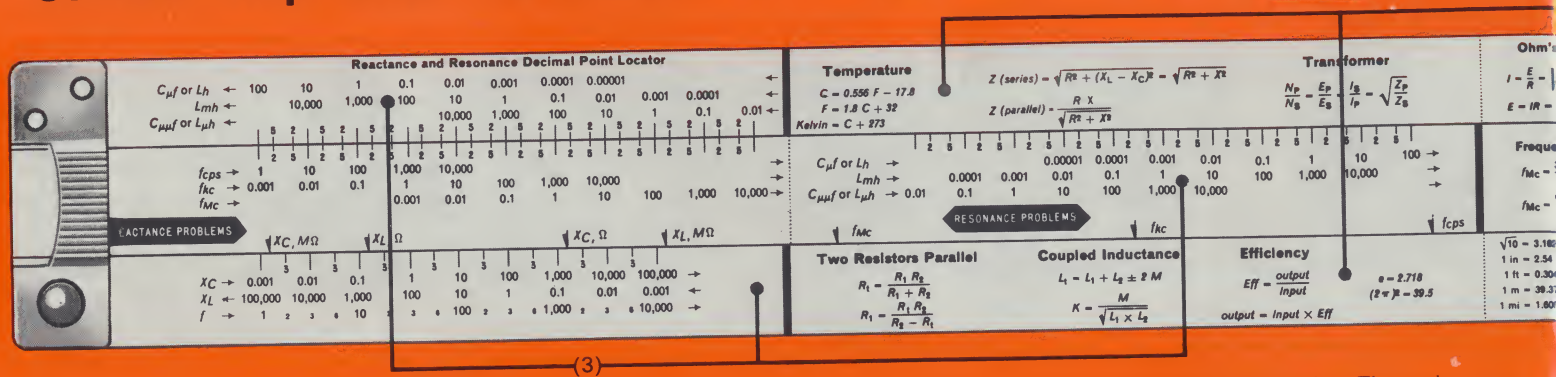


ment . . . regardless of temperature and humidity. The durable, lustrous white finish resists scratches, dirt and rough treatment. Numbers, letters and markings are sharp and clear for quick, accurate readings; all inverse scales are printed in red.

CIE's patented* rule features nine conventional scales (A,B,S,T,CI, C,D,L and Ln), *plus* two special scales. The "H" scale (1) is used to solve resonant frequency problems. The "2π" scale (2) is used for inductive or capacitive reactance problems, or for any problem involving the factor 2π. This combination of scales was selected on the basis of what men working in electronics told us they needed. It's a combination that permits you to handle all kinds of difficult electronics problems as well as such non-electronic computation as multiplication, division, square roots, logs, etc.

*U.S. Patent No. 3,120,342

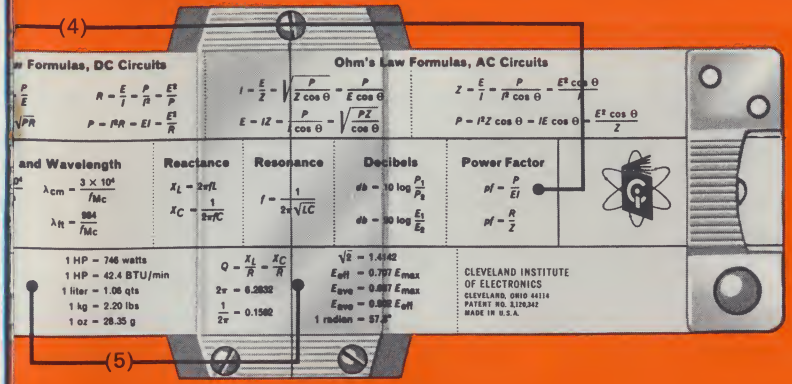
On the "flip" side...a unique decimal point locator plus useful



Men who have used conventional slide rules will quickly see there's something totally new on this side of the rule. It's an ingenious Reactance and Resonance Decimal Point Locator (3). You will find it particularly useful for quickly and accurately locating the decimal point in all problems involving reactance and resonance. (This scale eliminates the need to convert from one unit to another in such problems.)

The Decimal Point Locator uses a nomograph technique and has a sliding scale and indices instead of a straightedge. The scales are calibrated for mmf, μh, mh, h, c.p.s., kc, mc, X_L and X_C in ohms and M-ohms, with graduations only at major points. Besides indicating the electrical units involved, the Decimal Point Locator also provides rough but usually adequate numerical answers. If you need greater accuracy, the values obtained may be used to correlate more precise figures with the 2π and H scales on the face of the rule. Thus, you can use the CIE Slide Rule as a simple calculator for approximate answers,

formulas and conversion factors!



or as a regular slide rule for more accurate answers.

The "flip" side of CIE's Electronics Slide Rule also contains many useful formulas (4) for Fahrenheit-Centigrade Temperature Conversion, Ohms Law, Formulas for AC and DC Circuits, Frequency and Wavelength, Reactance, Resonance, Coupled Inductance and Efficiency. In addition, it has 18 commonly-used conversion factors (5) for instant reference.

And, with every CIE Slide Rule...this handsome leather carrying case!

Here's a special bonus: The CIE Slide Rule Case is made of genuine top-grain leather that's doubly reinforced at the "wear" spots. This sturdy case has a heavy-duty plastic liner, plus a removable belt loop for convenient carrying. It's a high quality case that provides ample protection for the precision instrument it was designed to carry.

An exclusive CIE "extra"...a practical instructior

This amazing program will enable you to solve complex problems in second

Now that you've seen the Electronics Slide Rule, take a look at the other half of this amazing offer. Four AUTO-PROGRAMMED lessons, complete with illustrations and examples, make learning faster, more effective, and interesting. You'll master hundreds of short-cuts . . . soon be solving complex electronics problems with speed and accuracy you never dreamed possible! Each lesson consists of small, "bite-size" segments plus examples and practice problems; there's also an examination you can send in for grading and consultation by CIE's expert instructors. And, when you complete your Instruction Course, you'll receive a handsome Graduation Certificate as evidence of your newly-acquired skill.

Part I Serves as a self-training course and handy refresher in proper slide rule procedure. Multiplication, division and interpolation are just a few of the sections covered. 14 sections with 130 practice problems.

Part II In addition to reciprocals, square roots and proportion, this lesson shows you how to use the slide rule for blending multi-step problems into one smooth operation. 10 sections with 149 practice problems.

Part III Explains use of special electronics scales, the Reactance and Resonance Decimal Point Locator, and trigonometric functions. 12 sections, 128 practice problems.

Part IV Right triangle applications plus summary of common formula settings and special 16-page appendix on the use of the Ln scale. 8 sections, 95 practice problems.

course of four AUTO-PROGRAMMED™ Slide Rule Lessons

while others plod along the old-fashioned "pad and pencil" way.

Sticky problems like these are a "snap" when you use CIE's Electronics Slide Rule!

Q. What is the maximum current that a 2-watt, 4800 ohm resistor can carry without being damaged?

A. 20.4 ma (requires one slide rule setting and 15 seconds to work).

Q. What size inductor must I use with a 38 $\mu\mu$f (pf) capacitor to build a tank circuit that will tune to 2360 kc?

A. 0.12 mh (one setting, 20 seconds. Slide Rule reads answer directly in mh or μh with decimal point correctly located . . . no need to convert from one unit to another, no complicated formula to remember).

Q. If the input to an amplifier is 0.032 watts and the output 12 watts, what is the gain of the amplifier in decibels?

A. 25.7 db (one setting, 20 seconds).

Q. What size cathode bias resistor should I use to produce 6 volts bias if plate current is 120 ma and screen current is 20 ma?

A. 43 ohms (one setting, 12 seconds).

Thousands call the CIE Slide Rule "the most useful, practical

Example No. 1: using the 2π scale to solve a reactance problem . . . Find accurately the reactance of a 60 mh choke coil at 5,000 kc. Solution . . . See illustration.

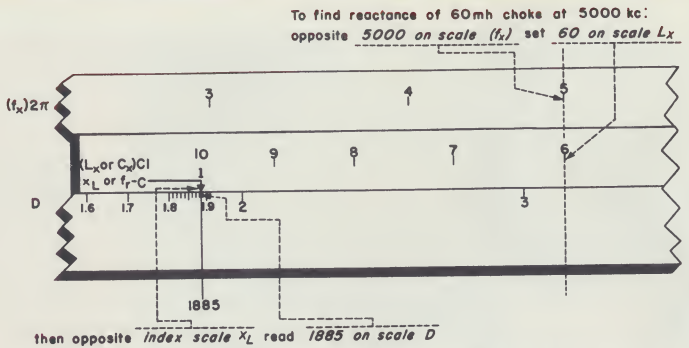
(1) Set the Hairline over 5,000 (which is the frequency) on scale (f_x) 2π.

(2) Move the slide so that 60 (which is the inductance) on scale (L_x or C_x) CI is under the hairline.

(3) Opposite the index of scale X_L or $f_r - C$, read 1,885 (which is the inductive reactance) on scale D.

(4) Use the Decimal Point Locator scales on the back of the rule to obtain 1.5 megohm as the approximate reactance value.

Hence, the accurate reactance of the choke is 1.885 megohms.



Finding that a 60 mh choke at a frequency of 5000 kc has a reactance of 1.885 megohms.

These two examples are taken directly from Part III of the Slide Rule Instruction Course. While they are just two of the hundreds of examples included in this course, they demonstrate how this slide rule is used . . . and how you can soon learn to use it in your everyday work.

tool" they have ever used. These two examples show why!

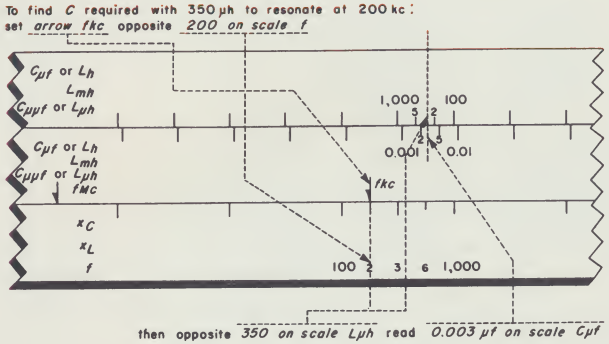
Example No. 2: using the Decimal Point Locator to solve a reasonance problem. As you may know, any reading from a slide rule is in absolute form (no decimal). Thus the figures "15" could be 0.15, 1.5, or 15,000. Where to put that decimal point is a real problem . . . even for men with years of experience! Conventional rules have no means of accurately locating decimals. But with CIE's Decimal Point Locator, it's easy to put that decimal point exactly where it belongs. Let's go through a problem to see just how this works:

Approximately what value of capacity should be used with an inductance of 350 μh in order to resonate at 200 kc? Solution . . . Refer to illustration.

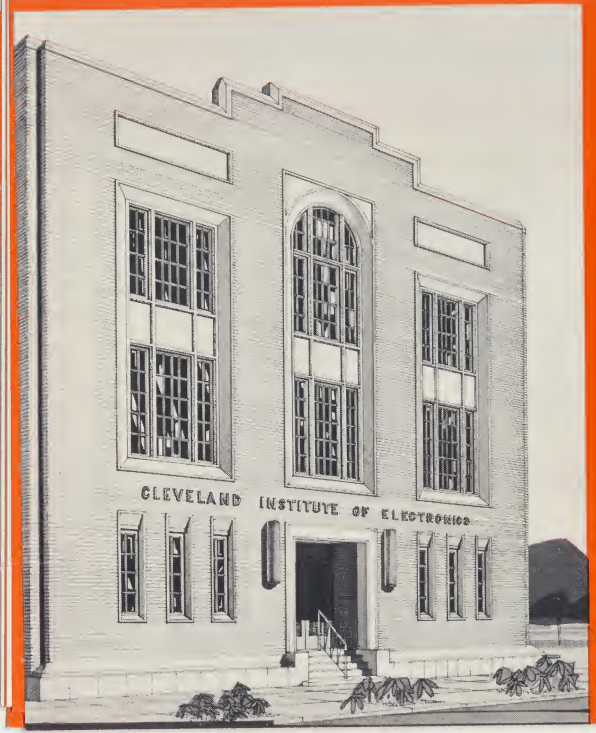
(1) Move the slide so that the slide arrow designated f-kc is opposite 200 on scale f on the lower body of the rule.

(2) Place the hairline over 350 on scale Lμh on the upper body of the rule.

(3) Under the hairline read 0.003 on scale Cμf on the slide. Hence, the answer is 0.003 μf.



Showing that for 350 μh to resonate at 200 kc, a capacitance of approximately 0.003 μf is required.



Your assurance of complete satisfaction...

When CIE introduced the electronics slide rule described on the preceding pages, it came as no surprise to the thousands of men who have gained success in electronics through CIE training programs. They know that CIE has a special understanding of what's needed in electronics. As a result, the CIE Slide Rule is an instrument that's *really* useful. And the Instruction Course of AUTO-PROGRAMMED Lessons is an outstanding example of how a man, working on his own, can gain skills and knowledge he will use for a lifetime.

But CIE knows that "seeing is believing." And that's why their Slide Rule with Instruction Course is available to you on a 10-day trial basis. It's also backed by the "Satisfaction Warranty" you see on the next page. It's a "no-risk" offer if ever there was one! So take advantage. Order your CIE Slide Rule today.

Cleveland Institute of Electronics has been a leader in electronics training since 1934, and is an Accredited Member of the National Home Study Council. Over 15,500 students are currently enrolled in CIE electronics courses.

CIE backs their Electronics Slide Rule with this exclusive warranty:

SATISFACTION WARRANTY

The Electronics Slide Rule with Instruction Course is available only from Cleveland Institute of Electronics, and is covered by CIE's exclusive "Satisfaction Warranty." Order it now . . . use it for ten full days. Then, *if you're not completely satisfied,* simply return it. CIE will refund your payment in full.

Here's proof that men who use the CIE Slide Rule are more than satisfied!

The Editor of Popular Electronics, Mr. Oliver P. Ferrell, states: "Why didn't someone think of this before? The convenience of having all relevant formulas imprinted on the slide rule saved me time the very first day. The 'refresher course' is a marvel of clarity. I couldn't help being amazed at how many standard formula functions I was performing the hard way."

An electronic technician, Mr. Bruce L. Roth, says: "The topics (in the slide rule course) are explained fully and are easy to understand. Nothing is left to guesswork. All the examples are skillfully presented, extremely interesting and highly practical. I really enjoy working electronics problems on your rule."

The Head of the Electrical Technology Dept., New York City Community College, Mr. Joseph J. DeFrance, exclaimed: "I was very intrigued by the 'quickie' electronics problem solutions. It is an ingenious technique. The special scales should be of decided value to any technician or engineer. Your slide rule is a natural."

The Manager of TV and Radio Training, RCA Service Company, Mr. M. O. Pyle, states: "I am very impressed. I have shown your slide rule to a number of my associates and in each case, their reaction has been most favorable. There is no question about this rule being a natural for men in electronics."

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CIE

August, 1966

Dear Friend:

This is your last opportunity to order an Electronics Slide Rule and Instruction Course and SAVE $5.00.

If you return the enclosed order card now you can still get one for only $19.95. But you must not wait. After August 31, 1966 the price goes up to $24.95.

Even if you have never had a slide rule in your hands before...you can now start solving electronics problems fast with the new CIE Electronics Slide Rule and Instruction Course.

How would you like to be able to whiz through math problems in seconds and be first with the correct answers? Impossible? No...not if you own a CIE "computer in a case." Try it at home or at work for 10 days.

This unique, patented slide rule is available only from Cleveland Institute of Electronics. It has special scales to help you solve problems quickly and accurately. Commonly used formulas and conversion factors are printed right on the rule.

Lets you fly through multiplication and division...fast. Ratio and proportion ...a snap. Square and cube roots...easy as pi. Zoom through real toughies with the log, sine and tangent scales.

Along with your CIE Slide Rule you will receive a four lesson home study Instruction Course. Each lesson is AUTO-PROGRAMMED to help you master hundreds of short-cuts quickly...the modern and effective way. While your fellow workers are plodding over tricky problems the old-fashioned "pad and pencil" way, you will be the first to say..."I've got the answer right here."

Read what Radio Electronics magazine says about the CIE rule in their Equipment Report (which I have enclosed):

> "There must be thousands of people in electronics who have never had the marvelous adventure of calculating problems with a single slide rule; other thousands have had to content themselves with a slide rule not specifically designed for electronics. For both groups, the new slide rule designed and marketed by Cleveland Institute of Electronics and built for them by Pickett will open a whole new era of quick calculations."

But that is not all! As a special bonus you will also get a top-grain leather carrying case. It has a heavy-duty plastic liner plus a removable belt loop. This

(Continued on other side...)

is truly a $50 value that you can now get for only $19.95...postpaid to anywhere! So altogether you will receive:

1. The New CIE Electronics Slide Rule...full 10", all-metal
2. A handsome top-grain leather carrying case
3. A four lesson AUTO-PROGRAMMED Instruction Course
4. Full instruction service to personally grade your lessons
5. A CIE Graduation Certificate upon completion of your course

Thousands of technicians, engineers, students and teachers have ordered the new Electronics Slide Rule. Their enthusiastic comments are proof of what it can mean to you. Here is what a few actual users have to report:

"I consider your Electronics Slide Rule course the finest course I have seen. Your presentation and the rule itself is 'tops'. Here is something of outstanding real educational value that far exceeds the price alone. Congratulations."

Edward A. Hudson, Jackson, Tennessee

"I was literally amazed at the value I received. Why, the rule alone, with its exclusive electronics scales, is worth the price itself...if not more. The instruction was terrific. Thank you for opening up a new realm of ease and efficiency in performing otherwise laborious calculations."

Robert D. Swinney, N. Little Rock, Arkansas

Yes, this CIE Slide Rule, properly used, will stamp you as a "pro". You will feel at home and at ease in the language of electronics. Just imagine how much valuable time you will save. Extra time to think and study...to work your way toward a promotion or a raise in pay. The CIE Slide Rule also makes an ideal gift to relatives, friends, employees...for birthdays, graduation, holidays, awards, etc.. It is attractively boxed and will last a lifetime. Guaranteed against all defects in materials and workmanship.

So order your Electronics Slide Rule today...and SAVE $5.00. Just send me the enclosed order card with your check for $19.95 in the postpaid air mail envelope. We'll rush your new CIE rule to you immediately. If, at the end of 10 days, you feel you'd rather stick to the "pad and pencil" method, return everything and every penny of your money will be refunded...no questions asked.

Be sure to order yours today, won't you? Thanks a lot.

Sincerely,

G. O. Allen

G. O. Allen
President

P. S. Where else can you get your own "computer" for only $19.95? After August 31, 1966, the price goes up to $24.95. Don't miss out on this last chance to SAVE $5.00.

EQUIPMENT REPORT

Here's what Radio-Electronics says about this great Slide Rule Course.

Slide Rule for Electronics

THERE MUST BE THOUSANDS OF PEOPLE in electronics who have never had the marvelous adventure of calculating problems with a slide rule; other thousands have had to content themselves with a slide rule not specifically designed for electronics. For both groups, the new model N-515-T rule designed and marketed by Cleveland Institute of Electronics and built for them by Pickett will open a whole new era of quick calculations.

Even if you have never had a slide rule in your hands before, the four lesson Auto-Programmed instruction course that is included takes you by the hand and leads you from simple calculations right through resonance and reactance problems with hardly a hitch. If you already use a slide rule, you'll find the lessons a first-rate refresher course. And it explains in detail the shortcuts built into this new rule.

On the front of the rule you'll find the regular slide-rule scales: A, B, C, D, CI, S, T, L and Ln; but there is also an H scale and a 2π scale as well as markings on the other scales such as X_L, X_C, f (for frequency), to make it easy to select the correct scales.

One big benefit of the new rule is the "Decimal Point Locator" (DPL) on the reverse side. Here you can find exactly where the decimal point should be, and get a rough calculation of the answer to any reactance or resonance problem. This not only saves a lot of time but greatly reduces the chance for error as compared to finding the decimal point in the usual manner. For example, you can find that a 500-pf capacitor has a reactance of between 100 and 200 ohms at 2 mc in a matter of seconds with the DPL. This is accurate enough for many calculations, but when you need to be more precise, simply turn the rule over, set the frequency on the 2π scale and the capacitance on the C_X (which is the normal CI) scale and read 159 ohms on the C scale using the X_C (usual D) as index.

As another example, you can find from the DPL that the reactance of a 200-μh choke is about 500 ohms at 455 kc. For greater precision, again turn the rule over, set the frequency 455 on the 2π scale, move the slide under the hairline to 200 on the L_X (CI) scale and read 573 ohms under the X_L (C) index on the D scale.

In both these problems we know *nearly* what the answer is by reading it approximately on the DPL. This tells us that the answer to the first problem is not 15.9 ohms nor 1,590 ohms but 159, and that the answer to the last problem is not 57.3 nor 5,730 but 573 ohms. (Decimal points must normally be placed by using pencil and paper and rough calculations, with an ordinary slide rule.)

If, for example, you need to know what inductance would have 300 ohms reactance at 100 mc, just set the X_L indicator to 300, the hairline to 100 mc and read 0.5 μh from the μh scale, or you could find that a capacitance of 5 pf would have 300 ohms reactance at 100 mc, etc.

With the DPL you can make quick approximations of resonance. You could find, for example, that a 200-pf capacitor and a 500-μh coil resonate near 500 kc. Reading from the front of the rule, on the H scale, shows that the actual frequency is 504 kc. Here again you can solve for any unknown; if you know frequency and capacitance, you can solve for L; if you know frequency and inductance, you can solve for C, or if you know frequency only, you can solve for the L-C product, etc.

In addition to the Decimal Point Locator on the reverse side of the rule, there are more than 60 of the most-used electronics formulas and conversion factors—Ohm's law for dc circuits, Ohm's law for ac circuits, frequency and wavelength, reactance, resonance, decibels, power factor, transformer impedance ratios, parallel resistances, series and parallel impedances, coupled inductance, efficiency, temperature C to F and F to C and Kelvin, effective-to-average and effective-to-peak voltages, feet to meters, meters to miles, horsepower to watts, Q and many others.

The rule has all scales necessary for performing trigonometric functions and more than 30 pages of the instruction book are devoted to solving such problems. These examples are very helpful to users unfamiliar with slide rules.

The rule is all-aluminum, with adjustable slide tension, and comes in a handsome stitched leather case with a thick plastic insert to protect the rule. Every rule comes with a free four-lesson course that will be graded by instructors at CIE if you wish.

I introduced this rule to a group of high-school students studying electronics and struggling through various reactance and resonance problems. After a short course of instruction on the rule they really "came to life" and began solving all sorts of electronics problems for the sheer fun of it.—*Wayne Lemons*